

What is claimed is:

1 1. A communication system having first communication means, second
2 communication means and a first transmission path as well as at least one further transmission
3 path between said first and said second communication means, in which at least the first
4 communication means are provided with transmission means for each of said transmission paths,
5 which are capable of sending at least part of a communication signal to the second communication
6 means, in which at least the second communication means comprise reception means for each of
7 said transmission paths, which are capable of receiving at least part of said communication signal,
8 wherein the first communication means comprises:

9 a training generator that generates a training code to be sent to the reception
10 means enabling the reception means to match a received signal to a corresponding transmitted
11 signal, wherein the training generator is capable of generating a training code with at least nearly
12 ideal cyclic auto-correlation properties such that its cyclic auto-correlation function is at least
13 nearly zero for all cyclic shifts, in that the transmission means are capable of concurrently sending
14 said training code in a mutually shifted manner and in that the reception means are capable of
15 performing a cyclic auto-correlation with respect to a received training signal.

1 2. Communication system according to claim 1, wherein the reception means
2 are capable of generating the cyclic shifts of a received training code and to correlate these with
3 said training code.

1 3. Communication system according to claim 1, wherein the training code
2 comprises a concatenation of the rows of a Fourier matrix.

1 4. Communication system according to claim 3, wherein the training code has
2 a length which is equal to the number of transmission paths or an integer multiple thereof.

1 5. Communication system according to claim 1, wherein the training code y is
2 derived from a maximal length sequence x with an uneven length L, having an auto-correlation of
3 -1 for all cyclic shifts, such that at least approximately
4 $y = x + j/oL$.

1 6. Communication system according to claim 1, wherein the training codes are
2 preceded and followed by a dummy code during operation.

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